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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/552,292	10/03/2005	Yasunori Kishimoto	36856.1374	1976

54066 7590 07/12/2007
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EXAMINER

SUMMONS, BARBARA

ART UNIT	PAPER NUMBER
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2817

NOTIFICATION DATE	DELIVERY MODE
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07/12/2007

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/552,292

Applicant(s)

KISHIMOTO ET AL.

Examiner

Barbara Summons

Art Unit

2817

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 October 2005 (pre-amend.).
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-16, 18, 19 and 21 is/are rejected.
- 7) ☒ Claim(s) 17 and 20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 10/3/05 & 11/18/05.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application
- ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. § 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 21 is rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 21 recites that the “one of the plurality of parallel-arm resonators is located between the series-arm resonators” which is unclear because the one parallel arm resonator must be “closest to the first common terminal” of amongst the plurality of “series-arm resonators and parallel-arm resonators” (see claim 11, last paragraph thereof). That is, if the one parallel-arm resonator is the closest to the first common terminal of all of the plurality of series-arm and parallel-arm resonators, then it cannot be between series-arm resonators or one of the series-arm resonators would then be closest to the first common terminal. Thus claim 21 begs the question: Is a series-arm resonator or the one parallel-arm resonator the closest to the first common terminal?

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 2817

4. Claims 11 and 12 are rejected under 35 U.S.C. § 102(b) as being anticipated by Taniguchi EP 1 005 153 (cited by Applicants).

Fig. 9 of Taniguchi discloses a surface acoustic wave (SAW) branching filter/duplexer comprising: a first lower passband ladder filter; a second higher passband ladder filter; and a first common terminal 45 to which one end of each of the first and second filters is connected; and wherein each filter is of the type disclosed (see section [0061]) such that the first lower passband filter includes a plurality of series-arm resonators S1-S2 and a plurality of parallel-arm resonators P1-P3, and one of the plurality of series-arm resonators and parallel-arm resonators that is closest to the first common terminal is a parallel-arm resonator P1, wherein the capacitance of the parallel-arm resonator P1 closest to the first common terminal is proportional to $40 \times 80 = 3200$ (see section [0045]), which is less than about $\frac{1}{2}$ the capacitance of another one of the plurality of parallel-arm resonators being P2 which has a capacitance that is proportional to $80 \times 200 = 16000$ (see section [0046]). Regarding claim 12, the capacitance of resonator P1 is $\frac{1}{5}$ the capacitance of resonator P2 ($3200/16000 = 1/5$).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claim 15 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Taniguchi EP 1 005 153 (cited by Applicants) taken alone.

Taniguchi discloses the invention as discussed above, except for explicitly disclosing that the parallel-arm resonators P1 and P2 have substantially the same resonance frequency.

The Examiner Takes Official Notice that it is standard, and therefore would have been well known, in the SAW ladder to have all of the parallel resonators have "substantially the same" resonance frequency and all of the series resonators have substantially the same resonance frequency with the resonance frequency of the series resonators being substantially equal to the anti-resonance frequency of the parallel resonators at the center frequency of the filter, thereby forming the passband of the ladder filter.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the SAW ladder filter duplexer of Taniguchi, if even necessary (i.e. they may already have the same resonance frequencies, as in the position of the International Searching Authority cited by Applicants), such that the parallel-arm resonators P1 and P2 (Figs. 9 and 1A) would

have had substantially the same resonance frequency, because Taniguchi is silent as to the exact resonance frequencies of the resonators, thereby suggesting to one of ordinary skill in the art that the standard and extremely well known mode of forming the passband of a ladder filter with the parallel-arm resonators all having substantially the same resonance frequency, would have been usable therewith.

7. Claims 13 and 14 are rejected under 35 U.S.C. §103(a) as being unpatentable over Taniguchi EP 1 005 153 (cited by Applicants) in view of Ikada U.S. 6,369,672.

Taniguchi discloses the invention as discussed above, except for providing a second common terminal to which the one parallel-arm resonator closest to the first common terminal and another parallel-arm resonator are connected, and an inductance element between the second common terminal and ground, and wherein the second common terminal is on the package material.

Ikada discloses (see Fig. 6-8 and 14) that, in a similar SAW ladder filter with the same number of resonators as Taniguchi (Figs. 1A and 9), it is well known to connect the parallel-arm resonator 8c closest to the first terminal 9a and another parallel-arm resonator 8d to a second common terminal 5c of the package (Fig. 8) and to connect that second common terminal 5c to ground by an inductance element 6 in order to provide the benefits of providing traps/attenuation poles at undesired frequencies (see e.g. col. 6, lines 55-59) to thereby tailor the frequency response of the filter.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the SAW filter of Taniguchi by having

provided the recited connection between the one parallel-arm resonator and another parallel arm resonator to a second common terminal on a package and an inductance connecting the second common terminal to ground, because such an obvious modification, as suggested by the exemplary teaching thereof by Ikada (Figs. 6-8 and 14), because such an obvious modification would have provided the advantageous benefits of providing traps/attenuation poles at undesired frequencies thereby tailoring the frequency response of the filter, as explicitly suggested by Ikada (see e.g. col. 6, lines 55-59), and as would have been known by one of ordinary skill in the art for providing filters with traps/attenuation poles as desired for each individual intended use.

8. Claims 16, 18 and 19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Taniguchi EP 1 005 153 (cited by Applicants) in view of Ohashi et al. U.S. 6,937,113.

Taniguchi discloses the invention as discussed above, except for a phase adjustment element between the second SAW filter and the first common terminal.

Ohashi et al. discloses that it is exceedingly well known in the SAW duplexer/branching filter art to provide a branching circuit (see e.g. 205 in Fig. 12) that inherently provides a phase adjustment and is a stripline 801 (see Fig. 15C and col. 10, lines 46-47) between one (Fig. 12) or both filters (see also Fig. 1 and col. 3, lines 34-43).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the SAW filter of Taniguchi by having provided a phase adjustment stripline between the second filter and the first common

terminal, as suggested by the exemplary teaching thereof by Ohashi et al. (Figs. 1, 12 and 15C), because such an obvious modification would have provided the necessary isolation between the transmitting and receiving filter as would have been known by one of ordinary skill, and wherein a phase adjustment element provided by an inductance element and a capacitance element rather than a stripline, would have simply been the substitution of art recognized alternative phase adjustment circuits, as would have been exceedingly well known by one of ordinary skill in the art.

Allowable Subject Matter

9. Claims 17 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Matsui JP 9-135145 discloses a SAW ladder filter having a parallel resonator closest to an input which has an electrostatic capacitance less than or equal to 75% of that of the other parallel resonators (see the abstract and Figs. 1-2).

Taniguchi U.S. 6,819,203 discloses a SAW filter with the first parallel arm resonator closest to an input terminal have a capacitance less than one half of another parallel arm resonator (see e.g. Figs. 14-16) to tailor frequency response of the filter.

Takayama et al. U.S. 6,891,449 provides evidence of the well known phase adjustment elements comprising inductance elements and a capacitive element (Fig. 1).

Ushiroku U.S. 5,999,069 discloses a SAW filter that has a first parallel arm resonator closest to an input terminal with an electrostatic capacitance less than one half to one sixth of the second parallel arm resonator (see col. 4, ln. 50 to col. 5, ln. 1).

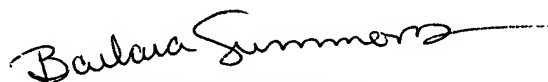
Hashimoto U.S. 5,914,646 discloses a SAW filter with a parallel arm resonator (P in Fig. 5) having an electrostatic capacitance less than $\frac{1}{2}$ that of the other parallel arm resonators to adjust filter attenuation characteristics (see col. 4, lines 48-64).

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Barbara Summons whose telephone number is (571) 272-1771. The examiner can normally be reached on M-Th, M-Fr.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bob Pascal can be reached on (571) 271-1769. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

bs
July 8, 2007



**BARBARA SUMMONS
PRIMARY EXAMINER**